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EXTENSION SERVICE

REVIEW

U.S. DEPARTMENT OF AGRICULTURE * FEBRUARY 1965



*Extension's Educational Work
With Commercial Family Farmers*

The Extension Service Review is for Extension educators—in County, State, and Federal Extension agencies—who work directly or indirectly to help people learn how to use the newest findings in agriculture and home economics research to bring about a more abundant life for themselves and their communities.

The Review offers the Extension worker, in his role of educational leader, professional guideposts, new routes and tools for speedier, more successful endeavor. Through this exchange of methods, tried and found successful by Extension agents, the Review serves as a source of ideas and useful information on how to reach people and thus help them utilize more fully their own resources, to farm more efficiently, and to make the home and community a better place to live.

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EDITORIAL

This issue of the *Review* takes up some phases of Extension's educational work with commercial family farmers and others engaged in commercial farming.

Over the past few years we have had a number of special issues dealing with commercial farming and agri-business. In addition, most of the general issues have had one or more articles dealing with commercial farming. Here is a list (by subject and date) of some of the special issues you may want to refer to again after reading this month's *Review*.

Marketing and Utilization—November 1963

Farm Records—A Management Tool—December 1963

Environmental Control/Materials Handling—June 1964

Marketing Facility Feasibility—September 1964.

—WAL

Extension's Future With Agriculture

by CHARLES E. BELL, JR., *Director*
Division of Agricultural Science, Technology, and Management
Federal Extension Service

One only needs to witness the plight of farmers in many of the less developed areas of the world to realize how far American agriculture has advanced. Handicapped by lack of technology and haunted by a feeling of insecurity, millions of farm families in these countries find little reward for their endless toil. We are reminded that our forefathers once tended their herds and plowed the virgin wilderness with guns and eyes alert for sudden emergency. Out of this battle with raw nature the American farmer, with the help of Research and Extension, has created the world's most efficient agricultural industry.

We should be thankful that our agricultural problems are problems of managing our abundance rather than those of scarcity, fear, and ignorance. The plentiful and dependable supply of high-quality food we enjoy has become so commonplace that we perhaps fail to appreciate what makes it possible. The miracle of commercial agriculture and its impact on the total economy of our Nation is a story that deserves wider recognition by all Americans.

The agricultural revolution was not a spontaneous development. It was a vision in the minds of dedicated men long before it began to materialize. With missionary zeal, pioneer Extension workers preached the gospel of *better living through better farming*. They helped farm families lay the groundwork for rural progress with demonstrations, group teaching, and individual counsel.

Like all great movements, it started slowly. As knowledge and understanding increased, the evolutionary process gained speed. Today the word "agriculture" has taken on new meaning. It embraces all of the operations involved in producing, assembling, processing, transporting, and distributing food and fiber.

The commercial farm is one link in the agri-business chain, and has become a competitive business institution involving large capital investment and difficult management decisions.

The changing character of rural America and broadening of relationships continue to widen the scope of Extension concern. *This does NOT mean that Extension is phasing out of work with the farmer.* The commercial family farm has always been and continues to be a primary audience for Extension. However, the farmer's problems are now so complex and closely interrelated with the other segments of our economy that their solution requires cooperation with all interests involved. This calls for closer teamwork within Extension and with other agencies and groups.

Technological advances are solving many of our problems, but as drastic changes are made in environmental conditions and management practices, new problems emerge to replace the old ones. These raise new questions for research and usually have far-reaching economic implications. Consequently, Extension workers are having to broaden their perspective, and teach production technology in an economic context.

Extension is rapidly adjusting its program with commercial agriculture to meet high priority needs. We must continue to exhibit the zeal, imagination, and flexibility to adjust to new situations which has traditionally characterized the Extension Service.

A dynamic commercial agriculture continues to unfold new and expanding opportunities for Extension educational leadership.

Production Technology

New production technology is being adopted at a rapid pace only to be made obsolete by still greater achievements of science. The technical know-how required to compete in an age of specialization has become exceedingly complex. In such a setting, mere dissemination of information is not sufficient. Research findings must be evaluated and interpreted in terms of adaptation to individual situations, economic feasibility, and implication as to alternatives available to the producer. This calls for highly competent specialists and teaching techniques tailored to the needs of modern commercial farmers.

Some of the major steps Extension is taking to meet these needs are: (1) Giving increased emphasis to advanced training of staff to upgrade professional competencies, (2) appointing specialists for intensive work in limited geographic areas, (3) developing short courses which deal with highly technical subjects in depth to meet needs of advanced commercial farmers, (4) making wider use of field trials and studies as teaching tools by Extension specialists in cooperation with Research staffs, and (5) developing package programs which embrace all aspects of efficient and economical application of technology in a given enterprise.

Management Technology

Farm and ranch operations today involve large amounts of capital and high degrees of risk. The com-

plexity of technology required and the economic environment in which farmers operate complicates decision making. Economic problems intensify pressures on farm people and are reflected in their demand for more economic information and assistance in developing management skills.

Extension is strengthening its educational work with commercial farmers to help them cope with these problems by: (1) Wider use of management-production teams of specialists, (2) increased emphasis on short courses dealing with the economics and technology of sound management and the proper combination of production technology into a profitable farm unit, (3) practical application of electronic data processing to everyday management decisions as well as long range organizational problems, (4) increased attention to individual technological developments as they fit into the total farm operation, and (5) intensive training with lending agencies and farmers on proper acquisition, use, and control of capital resources.

Livestock and Crop Health

Diseases and pests continue to exact a heavy toll from agriculture. Rapid progress in developing effective tools for reducing these losses has been accompanied by creation of new problems. Problems such as toxic residues, build-up of resistance by pests against specific chemicals, and rising costs of control measures. The situation is further complicated by the increasing mobility and concentration of animals and people. Diseases transmissible between man and animals will require increasing attention. Extension has a tremendous challenge to exert dynamic educational leadership in this area.

The techniques and economics of producing food and fiber and delivering these items in acceptable form to the consumer are constantly changing. Production of commodities tends to become concentrated in those areas that have a comparative advantage. Interregional competition is expected to intensify in the years ahead, accompanied by serious enterprise adjustment problems for many farmers. Extension has a major responsibility to help farmers analyze their situation, evaluate alternatives available to them, and make sound adjustment decisions to improve their competitive position.

Resource Development

Mounting pressures from an expanding urban population and industrial economy for use of natural resources create problems of increasing concern to farmers and ranchers. Some of the problems already confronting many producers are: (1) Rezoning of farming areas for nonagricultural uses, (2) reduction of grazing permits on public lands, (3) condemnation of farm land for public acquisition, and (4) acceleration of land values and taxes above economic levels for agricultural use.

Agriculture faces increasing competition for use of water as industrial and residential needs accelerate. Underground water reserves are being depleted at an alarming rate in many areas. Salinity problems already plague some irrigated operations. Pollution reduces the value of many

streams as sources of water. As water problems become more critical, additional laws governing use of water resources may be expected. Greater attention will need to be focused on multiple uses of land and water.

Extension will have a broadening responsibility to help farmers develop an understanding of the issues involved, the contributions they can make to the solution of these problems, and the alternatives available to them for adjusting to the situation.

Adoption of new technology creates additional need for a wide range of commercial services. Incomes of farmers are directly affected by the quality and costs of services provided by suppliers and contractors. Extension educational work with these firms and agencies complements their work and helps to improve the quality and the efficiency of their services.

In the final analysis, the results of Extension's educational work in the foregoing areas will be dependent on the development of competent lay leadership to transform these programs into effective community action. Extension has a continuing responsibility for training this leadership so they will recognize their opportunities, implement the appropriate action, and carry it through to completion. ■

The Team Approach

by M. R. GLASSCOCK

*Extension Fruit and Vegetable Marketing Specialist
Alabama*

FRESH vegetable growers in the Chandler Mountain community have come a long way since they organized in 1943. They have overcome setbacks and now operate a model marketing facility which benefits all concerned.

Chandler Mountain community consists of 70 small farms located atop the mountain in St. Clair County, Alabama. The area is a plateau about 1,000 feet above the surrounding valleys and is about 7 miles long and 3 miles wide. It has long been a center of fresh vegetable production and tomatoes account for 85 to 90 percent of the vegetable acreage. Due to its topography, the mountain produces tomatoes from mid-summer until a killing freeze which usually comes in November.

In 1943, the Chandler Mountain Tomato Growers Association was formed to provide a central market facility where producers could market tomatoes to repackers. A 4,500-square-foot packing shed was built at Steel community, located at the foot of the mountain, for the convenience of trailer trucks. There was no all-weather road extending to the mountain-top production area.



Quality production plus this new, improved marketing facility are giving Chandler Mountain Tomato Association members a stronger position in the marketplace.

During the late 1940's and into the mid-1950's, the area's vegetable producers were faced with insect and disease problems. They were lax in using good management. The result—low yields, poor quality, and waning buyer interest.

Community leaders, prompted by H. L. Eubanks, St. Clair Extension County Agent, held numerous meetings to discuss problems and plan improvement programs. The basic problems—low yields and poor quality—were attacked first. State staff specialists helped county personnel and farmers to develop demonstrations. These were observed by growers and resulted in changed production practices.

By 1960, nearly all vegetable producers in the area were using adequate plant food (usually based on a soil test). They acquired spray equipment and applied insect-, nematode-, and disease-control materials—and they improved harvesting practices. Better management effectively increased yield and quality. The area's production volume rose and buyer interest was renewed.

The renewed interest in marketing production created a need for expansion and improvement in marketing.

About 2 years ago, association members realized the need for an improved marketing facility. The old one was inadequate in many respects—it was not large enough to meet new demands, loading space was short,

utilities were not available, and the building was dilapidated. But more important, members realized the need for new marketing procedures—ones that would give producers a greater share of the market price and at the same time, meet changes in market demand.

The present production and marketing program was worked out in community meetings of local leaders, producers, county RAD leaders, county government officials, agricultural industry leaders, produce company representatives, local bank representatives, county Extension staff, State Extension specialists, and others. Principal leadership was from the county agent's office.

The Chandler Mountain Tomato Growers Association moved their sales activities to a new, 19,336-square foot grading and packing shed during mid-August of 1964. A modern facility conveniently located in the production area is serving as a sales center for mountain area growers. An estimated 80 percent of this year's 1,000-acre tomato crop is being marketed through the farmer-owned, locally-financed facility. Sales are approaching 4,000 40-pound fiber cartons of U.S. inspected tomatoes daily.

St. Clair food crop growers plan to use the new marketing facility as concentration and sales point for beans, squash, melons, and other food crops as well as tomatoes. They are also equipped to serve as the sales center for growers in the surrounding area. The conveniently located, modern facility allows producers to market produce near the point of production.

The nearby market permits operators to devote more time to production details and to harvest labor supervision. It reduces marketing cost and thus far, demand has equaled or exceeded supplies. Prices received have been encouragingly satisfactory.

Chandler Mountain growers are optimistic about their ability to expand volume. They are devoting more thought and energy to improved production practices.

A brief review of major factors responsible for the new St. Clair County facility should be of value to other areas.

First, growers recognized the necessity for producing high-quality produce in sufficient volume to attract wholesale buyers. With the able leadership of County Agent Eubanks and others, they effectively applied recommended cultural and pest control practices in production programs. U.S. No. 1 quality harvests are now a reality.

Communication between professional leaders and grower groups has been well maintained. The grower group has studied market needs, alternative procedures, and has accepted the financial responsibility involved in creation of the new market. They elected to use local bank financing. A service charge against each package that moves through the market is a means of liquidating the bank obligation.

Producer groups are now devoting packaging time to a study of most desirable and profitable packaging of mature tomatoes. After a trial period, they will no doubt offer "retail ready" packages of vine-ripe St. Clair County tomatoes to Alabama and other southeastern food vendors. This is another part of the Chandler Mountain Cooperative's effort to return the largest possible portion of the consumer's food crop dollar to St. Clair County growers. ■

Serving the Integrated Broiler Industry



by WILLIAM H. HENDERSON, *Sussex County Agent, Georgetown, Delaware*

BROILERS have been good to Delaware. They have been largely responsible for lifting the rural economy from a near-subsistence level in the 1930's to a rank of sixth in the Nation in realized net income per farm in 1963.

Broilers are the backbone of Delaware's agriculture and account for over 50 percent of the gross farm income. Keeping our broiler industry prosperous and growing is most important when the rural economy depends so heavily on this one commodity.

Almost since the day the broiler industry was born in Delaware, someone has been cautioning us about over expansion or losing the industry to another production area that has lower costs. When the industry was only a few years old, Delaware's Extension poultryman wrote in his Annual Report of 1934, "The entire broiler industry needs a genuine economic debunking. Poultry raising in Delaware is being promoted . . . by feed manufacturers, incubator companies, poultry journals, hatchery men, lumber dealers, real estate dealers, and others who have things to sell. City people who have lost their jobs are induced to take their savings and invest in poultry plants. A flyer distributed by the International Baby Chick Association urged farmers to grow two crops of broilers this season instead of one. This is in face of the fact that cold storage holding is 23 percent greater than a year ago with the greatest increases being in broilers and fryers."

In spite of such warnings, broiler production caught on. The growth of the industry has been phenomenal. Even in its infancy, the broiler industry was plagued with unstable prices. The danger of financial loss was so great that conventional lenders wanted nothing to do with broilers. Growers who tried to finance their own production gave up after a couple of back-to-back losses from poor flocks threatened to take their life savings and their farms.

But, "persons that had things to sell" saw the market

potential of broilers and provided the financing. As a rule, they risked the margin on the items they sold against a share of the profit on the broiler flocks they financed. This is the way broiler contracting got started—it has been a part of the industry almost from the beginning.

Up until the early 1950's, broiler growing contracts usually provided for the grower to get two-thirds to three-fourths of the return over cash costs as payment for use of house and equipment and for the grower's labor. The contractor assumed all the financial risk.

As production expanded in Delaware and even much more rapidly in the Southern area, farm prices fell from 26 cents a pound in 1955, to 17 cents in 1959, and 15 cents in 1961. While costs also declined as feed efficiency improved, the profit margin became very small. The usual share of the profit was not enough to encourage growers to continue to grow broilers. In order to maintain production, the contractors (in Delaware usually feed manufacturers) were forced to offer contracts that provided a guaranteed minimum payment plus a bonus for superior performance. This is the type of contract arrangement in use at present.

Having assumed all of the financial risk of production, the contractor must also be in a position to make all of the production and management decisions connected with growing and selling. Thus, the management decision-making center has shifted from a shared position between grower and contractor, to the contractor. While this situation is decried by many farm observers, it has provided the broiler industry with the necessary capital and management to keep the industry growing in spite of serious financial setbacks.

It is necessary to understand the structure of the industry in order to service it with educational programs. In Delaware our Extension program on broilers is mostly with the companies that produce and market the broilers. These companies along with other allied firms, have formed an organization known as the Delmarva Poultry

Industry, Inc. This organization of broiler businesses, commonly known as DPI, raises over \$150,000 annually to be used to promote the welfare of the broiler industry on the Delmarva Peninsula.

Their program of work covers all segments of the broiler business varying from research on the most efficient type of broiler house to merchandising aids for retailers. The real work of DPI is done by hard-working committees that are organized on a functional basis, i.e., feed manufacturing, hatchery, processing, marketing, and legislative. These committees ferret out industry problems, and along with Extension agents and specialists, design action programs to deal with the problems.

The value to Extension of having an industry organization like DPI working with you cannot be overemphasized. Not only do they provide financial assistance for projects and programs that would be difficult for Extension to operate wholly, but more important, they help pinpoint the problems. These are real, matter-of-fact problems—right from the executive's desk. These are the problems that industry people believe will directly effect the profits of these firms. These are the problems on which they want help and they want it immediately.

Not only does DPI help to identify problems, it actively participates in the work toward their solution. It calls upon the Extension Services in both Delaware and Maryland for assistance in gathering data in providing educational programs, and as consultants.

A close look at a list of educational programs reveals a change in Extension's approach from past years. The audience is a specific group that wants assistance in their particular field of work. There were only 15 enrolled in a Feed Microscopy School, but these were the quality control men from the major feed manufacturers in the area. They spent 2 days peering through microscopes under the guidance of professional Feed Microscopists.

Sixty people attended the Maintenance and Plant Engineers Workshop where they learned about "Hydraulic Systems," "Selecting the Best Lubricant for the Job," and "Preventive Maintenance Before the Broiler Explodes."

Another observation about educational programs for specific groups is that you reach people who never before attended a training meeting outside of their company. Many of those attending the Feed Mill Operator's Workshop had never heard of the Cooperative Extension Service before and thought of the county agent as someone who was interested only in farmer activities.

Extension still works with broiler growers, too. No so much on the care and management of broilers, because each contractor has his own carefully supervised "grow-out program" conducted by a serviceman who regularly attends University-sponsored Short Courses. Instead, the agent and specialists assist with such problems as house construction and equipment, comparing broiler growing with other alternatives for profitable use of labor and capital, and manure removal and disposal.

For example, low prices and other unfavorable publicity given the broiler industry in recent years has caused banks and other lenders to question whether loaning money for broiler house construction or improvement is

a good investment. Seminars have been held where credit agencies and industry people discussed: The competitive position of broilers on the Delmarva Peninsula; needs of the broiler industry for new houses for replacement and growth; and how the contractor, the broiler grower, and the lender can work together to keep a healthy poultry industry in the area.

The Extension specialist is finding that his role is changing, too. Giving technical information at meetings, in newsletters, and on radio still takes a considerable portion of his time. However, more and more he is being asked to serve as a consultant on a request basis. He is being called into the office of the company president for expert advice on when and how to reorganize, staff, or merge the firm.

A disease outbreak, excessive blisters, a faulty ventilation system, or the installation of a new processing method is likely to result in a phone call to a specialist and a personal visit for consultation. Farm visits by county agents and specialists have been the backbone of Extension programs. The same can be true with business firms.

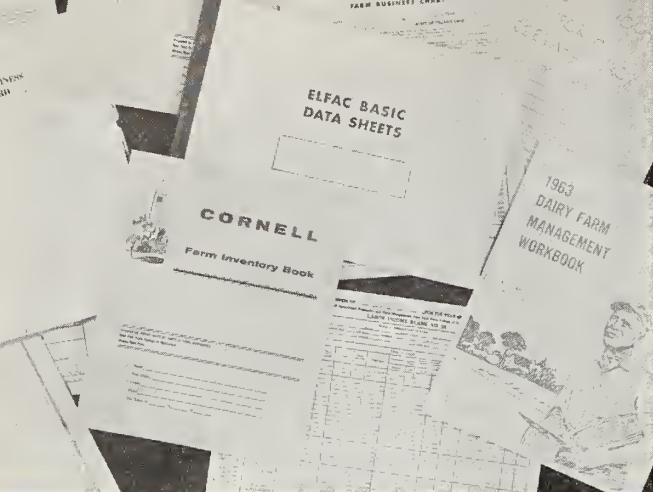
The problems of a business firm may be somewhat different from those of a farm in size, scope, ability to adjust, and objectives, but Extension has no choice but to offer to assist to the limit of its time and ability. In working with businesses, it is important to remember that you are not expected to have all the answers to all the problems. It is your job to provide technical information, educational programs, personal ideas and observations. But only the officers of the firm can make the final decision.

Serving business firms such as integrated broiler companies puts new educational demands on the county agent. He needs to broaden his reading matter to include business and trade publications. He will need to enlarge his contacts with the specialist corps that backs him up to include business analysts, financial advisors, industrial psychologists, engineers, and labor economists.

In Delaware, Extension's budget does not permit the development of this type of a specialist corps. Thus, one of the major jobs of the agent is to find someone who can provide the necessary technical advice. There are many sources of these specialists such as university staff, borrowing from other industries, and using private consultants. In Delaware with our very small staff, we believe it is better use of our time and money to hire the services of good technical people rather than trying to handle all the problems with our specialist staff.

County agents and production specialists should not fear that integration similar to what has occurred in the broiler industry will jeopardize their jobs. Instead, it can make them more productive and their work more rewarding because results are more dramatic and the work is more challenging.

As in the past, Extension programs will be carried on with both full- and part-time farmers. At the same time, more emphasis must be given to the importance of firms and agencies supplying, servicing, and financing production activities. In the future, it is quite certain that we will see even closer relationships among farmers, businessmen, technologists, nutritionists, and marketing experts. ■



Records Play Key Role In Farm Management Program

by C. A. BRATTON

Farm Management Extension Leader, New York

"Every farm is an experiment station and every farmer the director thereof." This was the opening statement of Dr. G. F. Warren's first farm management bulletin written around 1907. He went on to say that the job of the farm management worker was to collect information on farmers' experiences and from these data to determine why some farms paid better than others and which enterprises were most profitable.

This approach to farm management has continued over the years. Researchers have been challenged to find the best possible method for getting a record of the farm business and the way the farmer operates.

With the shift to larger, commercialized family farms, more emphasis has been placed on educational programs in management. The work has been expanded and new methods added. The focus, however, is still on what farmers are doing. This must come from records.

Kinds of Records

Several kinds of records have been developed over the years. Most of them serve both Extension and Research purposes. We are continually trying to improve the records and find ways to make them more useful to farmers.

Labor Income Blank 40 is a form used in obtaining business information from a farmer through the survey method. The Cornell Farm Inventory and Farm Account Books are widely used in the State and for specialized businesses, our looseleaf Farm Business Record is available.

Among our oldest records is Cost Accounts which includes detailed labor records. ELFAC (Electronic Farm

Accounts) is the newest general record in our "Extension Record Family." Special crop and livestock records have been developed from time to time for specific purposes.

These records are made available to farmers through the county Extension programs. Records play a key part in most of our farm management programs for commercial farmers.

Extension Objectives

In recent years, we have had two broad teaching objectives in our farm management Extension program. These are: (1) to develop the managerial skills of the farm family, and (2) to provide facts for families to use in making their management decisions. An "intensive" educational program has been organized for reaching the first objective, and a "general" program for the second. Individual farm records play a key role in both.

Farm Business Management Projects. In 1954, when the National emphasis in Extension was on the whole-farm approach, we developed "farm business management projects." These were a modification of the "farm account clubs" organized in the 1930's. There was a shift in emphasis from keeping accounts to the use of records in making management decisions.

Farm families enroll in a county farm business management project. They agree to keep farm records and to have them included in a group summary. The project is organized on a 3-year basis. In recent years, we have had about 1,200 families participating each year in these projects.

Participants in the management projects are introduced to the management process. Using the summary of their records, they are taken through the steps in making a management decision. These families are helped to develop a systematic approach to management problems. We sometimes refer to this approach as the "scientific method" for businessmen.

The summary and analysis of the records provides a basis for study at the project meetings and for use by the agent in counseling with the family. In these projects, the family develops their managerial skills along with making improvements in their business. The group summary is used in discussing management problems with farmers not in the project, agri-businessmen, and policymakers.

Cost Accounts. This research project has been in operation for 50 years. Detailed records are kept on a limited number of typical commercial farms. From these records, costs and returns are calculated by enterprises.

Cost Accounts are the source of many facts used by farmers making management decisions. These include comparative cost and return data for enterprises and physical measures of inputs and outputs. These data are used in various kinds of budgeting, including linear programming. The 50 years of records also provide many figures which are used in tracing trends in New York farming.

Farm Management Surveys. The survey method of obtaining business information from farmers has been used a great deal since 1907. It is probably the best

method for studying a cross section of farm businesses. At one time, surveys were used as an Extension technique for getting farmers in an area to study their farm management. Today surveys are being used to provide a cross section picture of what is occurring. They provide much information for teaching as well as for use in budgeting. Survey results also have been used in working with the agri-businessmen who advise farmers on management problems.

Enterprise Cost and Return Studies. Farmers, farm organization leaders, and others often have farm management questions for which they would like answers. To do this, sometimes one enterprise is selected for study. Here our information is obtained either by survey schedules or record books. Generally, the studies made have been for enterprises not included in cost accounts. Recent studies have included potatoes, peaches, Christmas trees, green beans, onions, and dairy heifers.

Cost and Experience Studies. Each new technological development presents a new management problem. The farm family must decide whether or not the newest item has a place in their operation. To make this decision, facts are needed on the original cost, operating costs, and how the change will affect the overall management of the farm.

Our point of view is that it is more realistic to study the actual experiences of the farmers than to simply develop budgets by the armchair research method. Surveys and account records have been used for this purpose. To be most helpful, these studies must be made during the early stages of introduction of the new development. For example, we studied experiences with hay conditioners when there were only a few in use. However, the data obtained were timely and used by many families in deciding whether a conditioner had a place on their farm.

A recent study of experiences with a new practice was that of free-stall housing. The results published last year have been in great demand.

This Tompkins County farmer says farm account records are invaluable in completing his income tax return.



Farm Families Use Records

Families use their records in many different ways in making management decisions. Some study their summaries to find where small leaks exist. Then by minor adjustments, they "tighten" up on the leaks and thereby improve their incomes. Others use the records in making major decisions on the organization of the business.

The Delaney's of Cayuga County are an example of a family who used their records in both ways. A study of their summary showed weaknesses in rates of production. This led to changes in some crop and livestock practices.

Next came a major decision. A problem pinpointed from the study of their records was that of size. Several alternatives for expanding were considered including a move to a larger farm in another area. Marjorie White and G.E. Monroe, the Extension agents handling management work in Cayuga County worked with the Delaney's in considering alternatives and budgeting the expected results of proposed changes. The decision was made to stay on the same farm but to enlarge the barn and the dairy. This has now been done. They will continue to use their ELFAC records to evaluate the results of their decision.

Ralph Winsor of Broome County is a Cost Account cooperator as well as a member of the farm business management project. He reports that his records have been used extensively in building his business from 29 cows in 1958 to 90 cows in 1964. Winsor, like the Delaney's, makes extensive use of his DHIA records in deciding which cows to cull and which heifer calves to raise.

Harold Shepherd of Genesee County has been a Cost Account cooperator since 1950. The Shepherd farm is a diversified dairy-cash crop operation. In making plans for the future, Shepherd turned to linear programming. With the assistance of Farm Management Specialist Randolph Barker and the Cost Account records, several alternatives were programed. This served as a basis for some major decisions on expansion plans for the future.

Records Serve Dual Role

In our New York farm management Extension work, records have two important uses. First, they serve as a tool in teaching management skills. Secondly, the records provide many facts needed in making management decisions.

Our farm business management projects are centered around the keeping of records. This provides the core around which we build the educational program designed to develop managerial skills. At the same time, the records provide to the family the information they need to keep check on where they are.

Management experiments are conducted by farmers. Records help the researchers to measure and evaluate the results of these experiments. They also serve the important role of providing facts which are made available to farmers through our general farm management Extension program. ■

WAYNE KRABbenhOFT was a young farmer who rented 160 acres in Jackson County, Iowa. He had done reasonably well. The land was productive, and through modern farming methods and judicious management, Krabbenhof has made a respectable living for his family.

After renting for several years, he was given the opportunity to buy the farm. The asking price seemed reasonable enough, but the owner required cash payment at the time of purchase. Krabbenhof would have to borrow a substantial sum of money to complete the deal. He and his wife were hesitant to take on such a debt: the couple face the most important decision of their lives.

The Krabbenhofs had recently enrolled in the Farm and Home Development Program. When John Henderson, the Jackson County Extension director made a spring farm visit to the Krabbenhof farm, the advisability of purchasing the farm was the chief

topic of discussion. There also arose the question of what the family might do if the farm were sold to another.

After walking over the land and examining the buildings, Henderson concluded that the asking price was considerably less than that for comparable farms in the neighborhood. He helped the couple establish a budget to estimate and project the future yield and income potential of the farm. The Krabbenhofs considered assistance their 15-year-old son might provide in making the purchase a family partnership.

The couple decided to purchase the farm, but only after a thorough evaluation of the many factors involved. A loan from the Farmers Home Administration provided the capital to complete the transaction. Today much of the loan has been repaid, and the Krabbenhofs have prospered as farmowners.

Vernon Owens, another Iowa farmer, planned to invest \$12,000 in a

cattle shelter. He reasoned that he could save \$600 (the annual interest on \$12,000 at 5 percent) in feed costs by protecting his feeding cattle during the winter. Owens asked Eldon Hans, the county Extension director, to help select a site for the proposed shelter.

Hans questioned the value of the building. He revealed that the \$600 interest charge would represent only about half the fixed cost that would be assessed annually against profits of the cattle-feeding operation. Hans suggested that the proposed shelter might be more valuable as shade in the summer than protection during the winter.

Motivated by his conversation with Hans, Owens began to consider other alternatives. He decided to erect several inexpensive shades for his cattle and invest the balance of the \$12,000 where it would earn a better return.

Wayne Krabbenhof and Vernon Owens faced decisions involving substantial amounts of capital. Countless similar situations arise each year, situations in which farm management education can be vital to the success or failure of a farm operation. As the number of farms declines, management requirements of each unit increase proportionately.

Advancing technology is continually transferring farm jobs from the specialized skill class into the management area. Farmers once needed to know how to select and care for seed corn; today they must appraise the performance of different varieties and buy those that rate well in tests. The ability to husk 100 bushels of corn per day is unnecessary. Needed now is the capability of selecting the right harvesting equipment and other capital inputs that determine profits. As each farm operator combines labor with more and more capital, the management function increases in importance.

For Wayne Krabbenhof, the alternatives were to continue paying rent with the insecurity of tenure, or seek farm ownership with the uncertainty of being able to meet interest and principal payments. Vern Owens faced

County Agent Henderson and Krabbenhof discuss a budget and estimate the income potential of the farm.

Farm Management Education

by LESLIE G. KRAL, *District Extension Economist,*
and GARY L. VACIN, *Assistant Extension Editor, Iowa*



the decision of where to invest a substantial amount of capital for the greatest return. Both men were assisted by Extension workers in exploring various alternatives. In each case, a decision was reached only after the situation had been completely appraised and all alternatives considered.

Extension workers, if alert to their responsibility of helping farmers use the decision-making process, can provide management education in a wide variety of situations. Accepting the challenge of providing management education, however, does not come easily. First and perhaps most important is a recognition of the need for management education. In many instances, motivation (very often self-motivation) is the key to this recognition.

The proficient Extension worker motivates himself to accept the challenge of providing management education. He is convinced there is a need for management education, and that he can make a genuine contribution in this area. Motivation may stem from experience, training, personal observation, or from administrative persuasion.

Self-discipline plays an important role in the successful Extension program. Because time is always a chief consideration, a well prepared plan of action is the Extension worker's chief means of self-discipline. Essential programs must be given priority; less important activities will have to be de-emphasized or eliminated entirely to allow more time for vital programs.

If management education is accepted as vital, the schedule may include a series of group meetings where participating farm couples are acquainted with the decision-making process in relation to farm and home management. Extension workers help them analyze farm and family resources, chart progress, and create an awareness of alternative opportunities for improvement. The couples become familiar with the use of budgets in estimating future income potential. They receive assistance in preparing an inventory and an adequate system of records so that the farm operation may be analyzed.

Farm visits are a vital part of the Extension management program. The importance of these meetings between Extension workers and individual families is often overlooked.



Vernon Owens faced the decision of where to invest a substantial amount of capital for the greatest return. His county Extension director suggested a cattle shade and helped him select a site for the proposed shelter.

During these visits, material covered in group meetings is applied to the family's situation.

As was the case with Wayne Krabbenhoft and Vernon Owens, decisions based on evaluations made during farm visits often determine the future success of a farm operation. The management educational program has been most successful in Iowa counties where farm visits were made in conjunction with group meetings.

Confidence is another important ingredient in the successful Extension program. The proficient Extension worker has confidence in his ability to converse with farm families and provide the services in which he has been schooled.

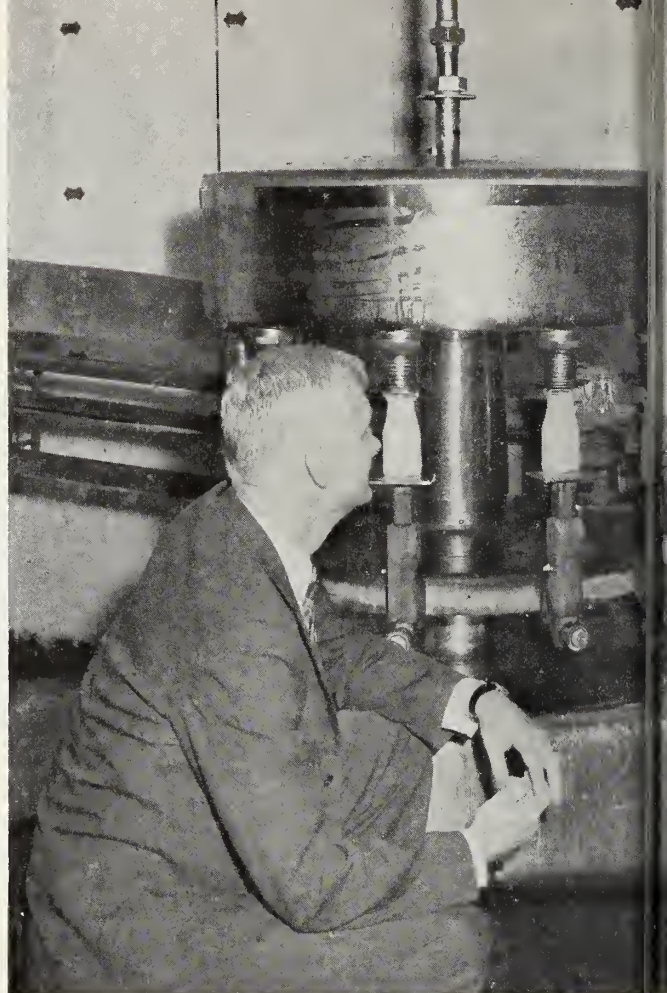
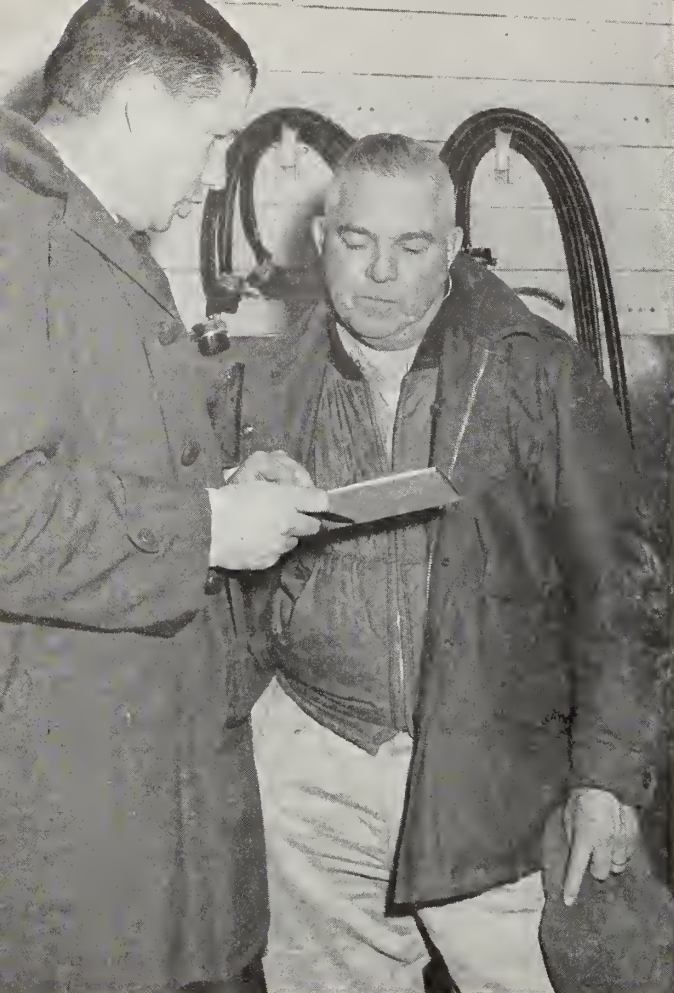
Experience breeds self-confidence—particularly the satisfying experience of seeing the results of one's own program materialize. The Extension worker's lack of self-confidence may be the greatest deterrent to more extensive participation in the management teaching area. He can gain self-confidence through participation and in-service training.

Confidence may also be evident in the relationship between the Extension worker and the family he serves.

While most management problems are of an economic nature, all are personal when considered in the framework of the farm family. In dealing with individuals and their problems, a satisfying solution can be arrived at only if a feeling of trust exists between the parties. The ideal relationship between an Extension worker and the farm family parallels that between a lawyer and his clients—all conversations are held in the strictest confidence.

The elements of an Extension farm management educational program should provide for a plan of learning for farm operators and a plan of instruction for Extension workers. The Extension worker's role is to assist the farm family in broadening its horizon of alternatives and improve its tools for choosing the best plan. *However, the farm family must always be responsible for the final decision.*

Advanced technology is providing a tremendous opportunity to enlighten farm families on proper approaches to organizing their resources and maximizing their incomes. It remains only for Extension workers to accept the challenge of providing this service. ■



Regionalization Revamps Program for Commercial g

by WALTER MELNICK, *Regional Crops Specialist*
and O. LEWIS WYMAN, *Regional Dairy Specialist*
Pioneer Valley-Berkshire Extension Region, Massachusetts

COMMERCIAL farmers in Massachusetts aren't bypassing their county agents as they did a few years ago. Farmers who fought shy of the generalist agent now welcome the specialist type of agent who operates in a multi-county region. These agents, with their competencies increased through graduate work, are helping commercial farmers who are facing problems of a highly technical nature.

Need for Regionalization

The regionalization of the Massachusetts Cooperative Extension Service program for commercial agriculture resulted from the recognition that the old ways of the generalist did not measure up to the requirements of the highly technical farming operation of the present.

This regional plan is now in effect in two-thirds of the State.

Agents spread too thinly over four or five commodity areas could not keep up to date in any one, nor could they attack problems which involved many aspects of the commodity industry.

The transformation from that situation of 4 years ago to the upgraded, specialized Extension educational program for commercial agriculture of today, has produced much commendation from farmers and farm organizations of the State. It has also provided some new, solid support for Extension.

Program Studied

In the beginning there was a complete reappraisal of



riculture

the Massachusetts Cooperative Extension program for commercial agriculture. This included a review of the state of agriculture itself and its needs and demands for educational assistance, and a review of the locations and abilities of county agricultural staff to meet these requirements.

Studies were conducted to find out the current location, size of operation, and other information about commercial farmers in the important farming areas of Massachusetts. Another study of the actual workloads of agents showed great disparity between counties. Decisions were made on what should be realistic workloads for the staff and on regional boundaries.

Another part of the proposed program was the development of graduate training to increase the competency of agents who were to be assigned as regional specialists.

Regional agents cover a wider geographical area. More time is spent outside the office and they rely on personal visits rather heavily. They know who the commercial men are, where they are, and how to reach them.

Major emphasis in graduate work was placed on management and marketing so the specialists would be better equipped to assist individual farmers with management problems, and to deal with each agricultural industry as a whole. Some original research was also involved.

Cooperation from Industry

It was necessary to meet with many groups and organizations to gain support for the proposed changes. Leading commercial farmers recognized the need for the changes and were willing to indicate this need to boards of trustees, county commissioners, and others concerned with the county Extension program.

The more efficient arrangement of workloads and the increased competencies of the staff indicated the need for fewer agents and made it possible to provide higher salaries for those who qualified for regional assignments. The supervisory time was reduced also.

Working Arrangements

The regionalization plan went into effect in one area of the State on July 1, 1961. Three western counties were selected—Franklin, Hampden, and Hampshire. Berkshire County was added later to make the present four-county region.

A regional executive committee was established to determine policy and oversee the operation of the program. It is made up of the chairmen of the boards of county Extension trustees in each county. One of the county administrators was designated as the regional administrator and the others became regional specialists and agents.

Accomplishments under the regional program have been many and varied. Workloads are more realistic and more nearly equalized between workers in different parts of the State. Eighty-five percent of the regional staff have master's degrees or have completed the course work for the degree. The number of positions has been reduced by not filling vacancies where these positions were no longer necessary. The regional specialists are taking over some of the work of the State specialists, allowing the State specialists more time for applied research and development of a more specialized program in support of the work in the counties.

Regional Agents More Confident

We who are on regional assignments now feel more adequate for the job. By concentrating on a particular area of farming, we keep abreast of trends affecting the industry, are better informed on technological advances, and can focus our efforts on special problems and special opportunities.

Regionalization has provided us the opportunity to



Demand for sized potatoes is greater. They are promoted as "All-Purpose" to coincide with most people's desire for potatoes which can be prepared several ways.

concentrate on special problems instead of spreading ourselves thinly over everything. The combination of completing a master's degree program and the opportunity to travel about to acquire information, has strengthened our program with all segments of the agricultural industry.

Another advantage has been the ability to concentrate on the whole range of the commodity industry. Many of the problems which face commercial vegetable growers are off-the-farm problems—in the area of marketing, especially.

The development of new market outlets for Connecticut Valley potatoes owes much to regionalization. Concentration of effort has resulted in expansion of the potato chip market and wider acceptance of table stock.

Changes in the agent's routine have been numerous. There is a wider geographical area covered; use of mass communications has been reduced. More time is spent outside the office, and we rely on personal visits and circular letters rather heavily.

We use two-way radio to keep in touch with the office. There is dictating equipment in the cars so reports and correspondence can be taken care of without delay. We now spend about a half-day a week in the office instead of the previous 3 days.

Clientele Change

One change that impresses us is that we are working with a more selected clientele. There are indications that the regional Extension specialist should be working even more intensively with the innovators and early adopters who serve as demonstrators for the others.

With this approach, returns per dollar invested in the Extension program have increased markedly.

The administrator of the western region is Albert H. Fuller. He is able to do a great deal of the administrative work by telephone but visits each county once a week.

Fuller feels that the administrator should function primarily to pave the way and make it easier for the regional specialists to conduct their jobs most efficiently, to help them get needed resources, to help them get training which will increase their competency, and to do whatever else is necessary to keep the educational programs for the commercial agricultural industry on a highly efficient basis. He says that the regional specialists are competent to determine the program they are conducting and they are given a great deal of leeway to make their own decisions. They are, however, held responsible for accomplishing what needs to be done. The reports are presented to the executive board of trustees for the region and the specialists are accountable to them for the quality of work they do.

This type of function for the regional specialist is paying off in Massachusetts' regionalized areas which include a similar three-county region of Worcester, Essex, and Middlesex counties. Discussions are being held on a proposed regionalization plan for the Southeast region involving four counties. With the formation of this region, the commercial agriculture Extension program will be completely regionalized.

Regionalization has been welcomed by staff, public officials, farm organizations, and the farmers themselves. It has revamped the structure of the Cooperative Extension Service, given new life to Extension, and most important of all, it has brought to Bay State farmers and related industries, the educational assistance they need and have sought which enables them to operate more effectively their modern, complex businesses. ■

Green Gold

(Continued from page 15)

values went up, new jobs were created, experienced plantmen and equipment operators were needed and additional services and suppliers were required.

To accommodate the salesmen, harvest foremen, buyers, inspectors, truckers, cooler operators, and others who follow the lettuce crop, new motels were built and restaurants were enlarged. In 1958 building permits increased threefold over previous years. When looking for a motel room or eating in a crowded restaurant during lettuce harvest, no one would doubt the value of the lettuce industry to the economy of Willcox and the area.

The Willcox lettuce deal has had its ups and downs. The acreage has leveled off now to about 5,000 acres annually. The annual value of the crop produced is usually over \$4 million.

The University of Arizona is continuing to test and demonstrate lettuce varieties in Cochise County with the hope that other problems of the area will be solved. Work is also being carried on in the areas of lettuce packaging and mechanical harvesting. ■

The rush for green gold



by NORMAN F. OEBKER
Extension Vegetable Crops Specialist, Arizona

WILLCOX is an important shipping point for Western Iceberg lettuce. Up to 100 carloads of lettuce per day are shipped during peak harvest periods from this Arizona town in Cochise County. The town of Willcox is a thriving community, especially during the spring and fall lettuce-harvest periods.

But Willcox was not always this way. Before 1957 the lettuce plant was almost unknown to the farmers in the area and the benefits from a several-million-dollar crop were not flowing into the community.

Then, in 1957 and 1958 came the rush—the rush for green gold. That first year about 800 acres of lettuce were tried commercially near Willcox. Results were good enough to encourage growers and shippers to plant over 12,000 acres in 1958. Fields in nearby areas of Stewart and Kansas Settlement virtually turned green overnight. Lettuce produced on redeveloped ranch land in the shadows of windmills once built by Kansas settlers proved to be competitive with the lettuce from other areas on the Nation's market. The influx of people and subsequent business brought in by this new industry made Willcox a booming town.

Of course this development did not come without problems. Outside interests came in to grow and handle the crop. Although these grower-shippers were experienced in other areas of Arizona and California, they did not know all the answers in Cochise County.

The first plantings showed that lettuce could be grown and that the product would fit a market slot in the spring and fall seasons. But since lettuce was new to the area, much information regarding production of this crop was lacking. Big questions asked were, "What varieties to plant and when to plant them?" Lettuce

County Agricultural Agent Carmy Page examines test plants in a commercial field near Kansas Settlement.

planted too late in the spring would develop tip-burn and lettuce planted too early in the fall would go to seed. Early in the game, because of lack of experience and information, some growers "lost their shirts" on Willcox lettuce.

Cochise County Agricultural Agent Carmy Page, quickly saw the dilemma in 1957 and called for help from the University of Arizona. Harvey Tate, Extension Horticulturist, responded by calling together vegetable researchers for a briefing on the Willcox situation.

Dr. Robert Foster, vegetable breeder; Dr. W. D. Pew, vegetable physiologist; and Dr. Paul Bessey, vegetable post-harvest physiologist offered assistance and ideas. The problems of the area were reviewed, a plan was agreed upon and the Extension-Research team approach was put into action.

Variety test plots were planned for the spring of 1958. Some 26 varieties were tried experimentally at four different planting dates. In the fall three planting dates were tried with these same varieties. Each year since that time similar tests have been made.

Tests were placed within commercial fields and received the same treatment as the lettuce grown for shipment. The cooperating grower-shippers furnished the land and all cultural operations up to harvest time.

Observations as to plant characteristics, yields, and quality were observed and recorded by the Arizona Research-Extension team. After harvest the lettuce was studied in storage and under simulated transit tests.

Field meetings for growers were held at the plots to demonstrate how the varieties performed. Information from the field and storage tests were relayed to the growers by circular letters, news stories, and personal contacts. Also, many growers personally kept an eye on the varieties as the plants developed.

As a result of these demonstration trials, the growers obtained accurate information about variety performances at different planting dates. Growers utilized this information by adopting the varieties that did best. Some varieties showed more resistance to the problems of the area than others and some performed much better in certain planting dates than others.

Information from these tests and studies has helped this area develop into one of the well-established lettuce areas of the United States and one with a reputation of producing high-quality lettuce during the late spring and early fall months.

With the help of the Arizona Agricultural Extension Service the industry continued to progress, rather than falter under the problems first encountered.

Not only did this lettuce deal have an important effect on the growers and shippers directly involved, but it had an impact on Willcox and Cochise County. It made important contributions to the economic development of the community and area.

Local businessmen and farmers, even if they did not grow lettuce, benefited from the new industry. Land

(Continued on page 14)

Meat Animal Improvement

In this section are three articles dealing with Extension's educational work in meat animal improvement. They are examples of the latest research and technology applied to the improvement in production efficiency of high-quality meat with consumer appeal.

Ohio Pork Improvement Program

Less Fat—More Lean

by W. H. BRUNER

Extension Animal Science Specialist, Ohio



In Ohio, the Extension Service has an important role to play in releasing pork improvement data to pork producers and other segments of the industry. Through the cooperation of the Pork Improvement Association of Ohio, additional data is released on litters certified through the Ohio Pork Improvement program.

Ohio purebred breeders have made substantial progress during the past 10 years in providing commercial pork producers with meat-type seed stock. A comparison of pigs evaluated at the Ohio Swine Evaluation Station shows: Comparing the first season (fall 1954) with the 1963 fall season, backfat has been reduced 17.68 percent, loin eye area (center pork chop) increased 7.05 percent, and lean cuts of chilled carcass weight increased 5.54 percent.

The pork industry ranks third in gross income to Ohio farmers. In 1963 they marketed 4,195,000 head of hogs with a value of over \$139 million. Meat packers in the State processed 4,535,000 head during 1963.

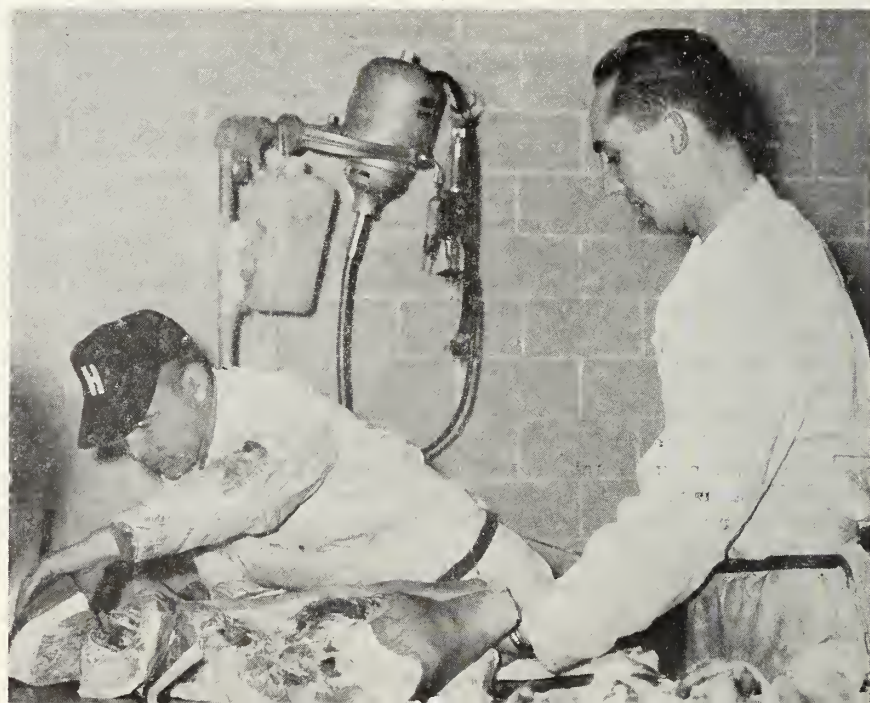
This thriving industry is supported by a unique educational pork improvement program in Ohio. It was developed in 1947 by pork producers and associated interests. It is now carried out through the facilities of

The Ohio State University meat laboratory and the Swine Evaluation Station, under the supervision of the Extension Service and in cooperation with the Ohio Agricultural Experiment Station.

The Ohio program is a selection program. Its main purpose is to help locate and recognize prospective breeding stock that will increase the

production efficiency of quality market hogs. The official governing body is the Pork Improvement Association of Ohio. Any pork producer who nominates a litter automatically becomes a member of the association. Selection of prospective breeding stock is made on the basis of records that indicate: Absence of inherited defects, prolificacy, nursing ability,

The Ohio State University's meat laboratory evaluates the carcasses of pigs which have previously been tested at the Swine Evaluation Station.



rapid growing ability, efficient feed utilization, superior carcass merit, and eligibility for breed registration.

Two programs are available to breeders in evaluating litters—station and field. The station has 130 pens. Spring and fall farrowed pigs are evaluated at the station. To participate in either program a breeder nominates a litter within 10 days after farrowing, weighs and qualifies the litter at 21 or 35 days of age.

In the station program, a pair of pigs (barrow and gilt if possible) is evaluated for rate of gain and feed utilization from 63 days of age until the pigs weigh about 210 pounds. Station pigs are full fed a standard ration. At the end of the test, both pigs are slaughtered at the University meat laboratory and detailed carcass data is secured.

In the field program the pigs remain on the breeder's farm until they reach about 210 pounds. Then two pigs from a litter are slaughtered at the University meat laboratory.

Litters qualifying for certification must meet certain standards. They must: (1) have 12 udder sections on sire and dam (2) have eight pigs per litter raised free from inherited defects, (3) meet 21- or 35-day litter weight standard, (4) weigh at least 200 pounds at 175 days of age, (5) require not over 340 pounds of feed per 100 pounds of gain for fall farrowed litters or not over 320 pounds of feed per 100 pounds of gain for spring farrowed litters, and (6) yield 52 percent lean cuts of chilled carcass weight and meet specified carcass measurements.

During the past 10 years, 423 breeders have nominated 5,542 litters. A total of 2,147 litters have been evaluated in the station program and 896 have been certified *Superior*. Litters evaluated in the field program numbered 553, with 268 certified *Improved*. Three hundred thirty-five litters have qualified as certified matings.

Ohio Pork Improvement performance data is made available to the various National Breed Associations for breed certification.

Boar evaluation is another phase of the Ohio program. Boars from certified mated litters are tested. Two boars from a litter are individually fed, with information obtained on

rate of gain, feed efficiency, and backfat thickness; 172 boars have been evaluated.

In the past year, 185 breeders nominated 742 litters in the program. Of these, 531 litters were tested and 284 met the official standards, providing about 700 new sires for use of commercial pork producers. These boars, together with others certified in past seasons and still in service, are being used to sire at least 350,000 market hogs annually. The Ohio program has demonstrated that the net return on such hogs is increased about \$2 a head through higher market prices and lower feed requirements. It is estimated that an increase in net income of about \$700,000 annually is returned to Ohio farmers as a result of the educational effort and direct assistance rendered through this project.

A large amount of educational data has been assembled from this project. These data have enabled us to draw the following conclusions.

★ Meat type hogs required less feed (weaning to market) and reached 210 pounds live weight at the same age as fat hogs.

★ Barrows grew faster than littermate gilts, but gilts had leaner carcasses.

★ Boars required less feed than littermate barrows and gilts.

★ Pigs grew faster and required less feed per 100 pounds of gain when fed pelleted feed than when fed meal.

★ Pigs with heaviest post-weaning weight (63 days) reached 210 pounds at a younger age than lighter-weight pigs.

★ Pounds of skinned ham, pounds of trimmed loin, and square inches of loin eye, on both barrows and gilts, were more closely correlated with lean cuts of carcass weight than they were with carcass length, backfat, or daily gain.

★ Spring farrowed pigs required less feed per pound of gain than did fall farrowed pigs. ■

Progeny Test—Carcass Evaluation

Better California Beef

by REUBEN ALBAUGH and J. T. ELINGS
*Extension Animal Husbandry Specialists
California*



The California beef cattle progeny testing program has as its purpose the location of bulls that sire rapid gaining offspring with superior meat-producing carcasses. Carcass improvement in beef cattle will do more to increase the consumption of this commodity than any other single factor. From time immemorial those working in the field of animal husbandry have attempted to determine quality and cutability of beef carcasses by looking at the live animal.

Scientific workers in many parts of the world have been engaged in

projects to determine quality of a carcass by the use of drugs or by the use of equipment such as sonar devices. Although these methods of forecasting quality and cutability of a carcass have shown some promise, none of them are yet accurate enough for use in selection. Until these or other systems are perfected to use on the live animal, breeding animals that produce superior carcasses must be located through the progeny test and carcass evaluation.

In 1961 the University of California Agricultural Extension Service (farm advisors and specialists) and the Department of Animal Husbandry

(Drs. Eric Bradford and Floyd Carroll) launched a progeny testing program for beef cattle to determine gainability, quality, and cutability of carcasses. A project was prepared setting forth the purpose, introduction of the subject, proposed tests, and individual responsibilities.

Illustrative material, supplemented by a syllabus, was prepared and presented to farm advisors by the specialists at several regional meetings. Farm advisors then organized approximately 25 meetings of cattlemen where this project was presented. In addition, maximum publicity was given to the proposed program through all news media. These techniques are paramount to the success of any applied field research program.

The first year 16 breeders representing 34 bulls were enrolled. The project was composed of four different phases: (1) selecting bulls and cows; (2) gathering data on calves from birth to weaning; (3) studying their performance during finishing period; and (4) analyzing carcasses for quality and cutability.

Two or more bulls of the same breed and age (preferably 2-year-olds) were selected on each ranch. About half of the bulls in this program had individual performance records. They were mated to 25-30 cows each. These animals were managed on the same ranch and environment. During the breeding season they were grazed separately, but after the mating season these animals were run together. All cows and bulls involved in the test were weighed and graded at the beginning of the program. The cows were randomly selected and were identified by tattooing, double-ear tagging, or hot brand numbering.

All calves in this project were tattooed shortly after birth to allow the association of calf identity with that of sire and dam. Birth dates were recorded on these calves; weaning weights and grades were taken on all calves. This included those that were selected for feedlot testing as well as the others in the herd.

Between 8 and 10 steer progeny of each bull were selected at random after weaning and full-fed in the drylot until they reached a low choice grade. This was usually after about 180 days.



This calf is being double-ear tagged for easy identification in the future.

Data were secured for each individual calf under the full-feeding program including initial weight at lot, value of live animal at lot (price/lb x wt), weaning grade (UC), final weight; final grade (live USDA slaughter), total gain per animal for feed period, and average daily gain.

The following information was obtained by ranch group average (two or more sire groups from the same ranch); feed consumption and cost for all calves; average pounds of feed consumed per day per animal; average feed cost per head daily; average cost per pound of gain; number of pounds of feed per pound of gain; other costs—hauling, brand inspection, killing charge.

Prior to slaughter, U.S. Grading Service back tags were placed on each animal. A similarly numbered USDA steel tag was attached to each carcass at slaughter. All carcasses were graded by the U.S. Grading

Service using the dual grading system.

The following data on carcasses were recorded for each calf: hot and cold carcass weights; wholesale value of carcass; percent yield; percent cooler shrink; U.S. slaughter conformation and quality grades; area rib eye; thickness of fat over rib eye; estimated percent kidney and pelvic fat; percent trimmed primal cuts as determined by U. S. grading formula; carcass index (percent trimmed primal cuts adjusted for quality); and weight and value of closely trimmed, boneless retail cuts.

Eight breeders representing 16 bulls will complete the first year of this project. Data on all 16 bulls have been assembled and although this information has not been thoroughly analyzed, some of the preliminary results are interesting.

A total of 166 calves were involved in this project. When slaughtered they averaged 457 days of age; they were fed for an average of 166 days. Seventy-two percent graded *Choice* or better, 22 percent *Good+*, and 6 percent *Good*. Four of the animals graded *Prime*. Out of 138 head there were 66 with a carcass index under 50 percent, and these animals gained on the average 2.27 pounds daily. Seventy-two head in this group had a carcass index over 50 percent; their daily gain was 2.37 pounds.

This indicates, at least in this test, that fast-gaining cattle have a carcass index just as high or higher than slower-gaining animals.

There were no essential differences within herds between carcass indices of the progeny of the bulls. If future data substantiate this information it may be that the heritability of carcass index is low. On the other hand, there was a distinct difference in rate of progeny gain between sires in some herds. This resulted in as much as \$18 per head difference in carcass sale value, comparing calves of two bulls on one ranch. It would seem then that rate of gain and factors for rapid growth are still highly significant in any beef cattle management program.

A complete analysis of this project is being conducted. Data presented here are preliminary to the full analysis. This project will continue through 1965 and 1966. ■

Wisconsin Sheep Improvement

by VERN L. FELTS, *Extension Livestock Geneticist, Wisconsin*



Although the art of livestock breeding has been practiced since the domestication of animals, the application of scientific knowledge in livestock improvement has been limited to the past 2 decades.

This is not to say that the breeders of years past did not possess rare abilities or that they did not enjoy outstanding success. Much to the contrary. Their keen observations led them to methods of selection and matings which revolutionized the livestock industry. However, those observations did not provide answers to how and why the results were obtained nor were they subjected to experimental tests to provide scientific knowledge as we view it today.

The development of the Wisconsin Sheep Improvement Program (WSIP) in 1950 was an attempt to apply the available genetic knowledge into a workable program for improving the

sheep population. Knowledge used in formulating the applied methods includes estimates of differences of heritability of traits, the genetic association or correlation of traits, genetic variability and, if it can be included in this same category, estimates of the economic value of the traits.

Effective selection of breeding stock is the key to improvement. WSIP was developed to aid the producers in the selection of their breeding animals, using performance records as indicators of differences in genetic merit.

Present-day breeding and selection programs emphasize traits of economic importance.

In formula form the breeding program can be depicted as:

$$\text{Profit} = \text{Income} \text{ minus } \text{Cost}$$

where:

$$\text{Income} = \text{Volume of Product} \times \text{Price}$$

It follows then that traits having

the greatest effect upon cost, volume, and price —as determined by quality—are the traits which should be emphasized for greatest net profit. Since wool and lamb are the two products from which most of the income is derived, increasing volume, lowering cost, and increasing quality in those traits is of primary importance.

In WSIP, fleece shearing weight, rate-of-gain as measured by 4-month weight of lamb(s), and twinning, are used in computing the performance index. Other traits, such as wool grade or lamb carcass quality, are not used because of the small variation within a flock or the difficulty in obtaining reliable measurements.

Cooperating members keep the necessary records, such as birth dates, identification, and shearing weights. When the lambs average 4 months of age a WSIP fieldman helps the producer in weighing the lambs. Performance indexes are calculated by the College of Agriculture, which the breeder can then use as a guide in selecting replacements and culling the breeding flock.

Records from a program of this kind are extremely helpful in conducting Extension animal breeding work. They provide factual data for presentation at meetings in stressing the need for performance testing as the means of selecting breeding stock. They show quite dramatically, the variation in production which exists between flocks and potential production with a proper combination of environment and breeding.

For instance, the following table giving the differences between the top one-fourth and the low one-fourth brings this out very clearly.

	4-Month weight	Pounds of lamb per ewe—4 mo.	Fleece weight
	<i>Singles</i>	<i>Twins</i>	
Top fourth	98	91	141
All flocks			10.5
in 1964	80	74	107
Low fourth	66	60	81
			8.5
			6.5

The trend over the years indicates a steady increase in 4-month weight of lambs. This should not be used as evidence of the merit of the program, or as proof of genetic change, because different flocks are in the program and environmental changes have occurred during that time. However, a part of that change is un-

As an incentive to the breeding program, the Wisconsin State Fair lists a performance certified class. This ram was also champion in the open show.



doubtedly genetic as brought about through the selection program.

PERFORMANCE RECORDS OF FLOCKS
IN THE
WISCONSIN SHEEP IMPROVEMENT
PROGRAM

Year	Percent of lambs that are twins	4-month weight	Pounds of lamb per ewe—4 mo. weight	Fleece weight
<i>Singles Twins</i>				
1950	52.0	63	58	8.5
1951	54.6	65	59	8.3
1952	54.6	62	57	7.9
1953	58.7	67	61	8.5
1954	52.5	67	60	8.2
1955	58.3	68	60	8.3
1956	57.5	67	61	8.5
1957	58.2	71	65	8.9
1958	59.9	73	68	9.5
1959	60.7	74	69	9.7
1960	63.5	74	68	9.9
1961	59.4	71	67	9.4
1962	59.5	75	71	9.9
1963	60.4	81	77	10.5

The number of participants has usually been around 100. No concerted effort has been made to increase participation because of limitations of fieldman help and processing of the records. However, with present plans by Midwest Extension Specialists, in which data processing machines will be used and breeders will do their own weighing, there will be no limit to the number of breeders who can participate.

Perhaps the single most important factor of effective Extension work in the area of animal breeding is stimulation. Patterns of recognition in the show ring have developed over a long period of time which are looked upon (in the purebred business) as being the ultimate in this field. With the differences in show ring and performance testing methods of evaluating breeding stock, it is difficult at times to enthruse purebred breeders to use performance as the guide in their breeding program.

In a partial answer to this problem, a performance certification program was started in 1962, with only the top performance animals within a flock eligible for certification.

This provides an opportunity of publicizing the program, the sheep, and the breeder, yet keeping it on a sound basis as these animals represent the tops in performance.

Through the performance testing and certification programs we hope to stimulate all purebred and commercial breeders to go all-out in breeding for performance in their breeding programs and thereby attain the maximum in genetic improvement in the sheep population. ■

Research and Extension Centers Contribute to the Efficiency of Texas Agriculture

by JOHN E. HUTCHISON, *Director, Texas Agricultural Extension Service*

AGRICULTURE today is a highly specialized and complex industry—one that has become heavily dependent for its continued vitality on the rapid implementation of research and technological advances.

Because of the phenomenal increase in specialization, technological developments, and mechanization requiring greatly increased investments, a greater need exists for having an adequate staff of well-trained technical specialists to backstop county Extension personnel.

Because of the distances involved and of the agricultural diversity in Texas, more intensive and specific assistance can be provided by subject-matter specialists when at least some of them serve on an area basis rather than statewide. By serving a more limited area, these specialists can personally conduct continuous training programs for county Extension agents and assume responsibilities for doing more of the direct teaching.

As agriculture has become more complex—and with the twofold responsibility Extension specialists have of demonstrating the applicability of new research information and for identifying the most pressing problems requiring new or further research—the need is intensified for ever-increasingly closer relationships between Research and Extension in planning and coordinating efforts.

Texas has 12 Extension districts. District agents or supervisors are headquartered and reside in the districts for which they are responsible.

Currently there are some 40 agricultural experiment substations and field laboratories located throughout the State. Upon the recommendation of the Board of Directors of Texas A&M University, the Texas Legislature recently directed Dr. R. E. Patterson, Dean of Agriculture, to reduce

gradually the number of experimental substations and field laboratories and to develop, over time, "Research and Extension Centers" with at least one located in each major type of farming area of the State.

Ultimately it is anticipated that there will be one "Prime Research and Extension Education Center" located in each of the 12 districts. These will provide an opportunity for the Extension subject-matter specialists' programs to be more closely coordinated with the ongoing Research efforts and to make possible continuous dialogue between Extension and Research specialists. Dean Patterson is giving vigorous leadership to their development.

In addition to creating an environment in which Extension and Research specialists can best coordinate their efforts, the development of the "Centers" will make it possible to bring together teams of Research specialists whose work can be mutually supporting. Opportunities for increasing research output and for engaging in more basic research will be enhanced by this arrangement.

Two such centers, at Weslaco and at Lubbock, have already been established. Experiences gained at these locations have provided ample evidence that the advantages envisioned for this arrangement are being fully achieved. Commercial agriculturists have been especially enthused about the resulting strengthened programs and the greater accessibility of highly-trained experts.

Particularly significant has been the ability to bring to bear an interdisciplinary approach in dealing with problems at the local and county level. The approach offers an ideal means for incorporating management education into ongoing educational programs in agriculture. ■

The Egg Business

short courses step up extension teaching

by HUGH S. JOHNSON and S. F. RIDLEN

Extension Poultry Specialists, Illinois

THE egg business has become very specialized and technical. As a result, more detailed information is being demanded from both the poultry Extension specialist and the researcher. These demands come not only from producers but from feedmen, hatcherymen, farm advisers, vo-ag teachers, and other related industry personnel.

To help meet this need, and at the same time to add depth and breadth to the poultry Extension program in Illinois, a short course was conducted on a pilot basis during the winter of 1963 in the southwestern part of the State. The results were so gratifying that two schools were conducted at different locations in 1964.

Each school consisted of 6 sessions spaced over a period of 6 weeks. Each session lasted 2-2½ hours. All schools were multi-county in nature and each involved from 8 to 15 counties.

To date, 180 individuals from 34 counties have attended these three schools. Sixty percent of these people were egg producers, with a combined total of nearly 400,000 layers. Others who attended were feedmen, hatcherymen, farm advisers, poultry servicemen, State Department of Agriculture personnel, vo-ag teachers, equipment company representatives, and veterinarians.

Much of the early organizational work is done by the poultry Extension specialists. The first step involves the selection of an area in which to hold a school. Basically two factors are considered—concentration of poultry, and the amount of new activity. Next a host county is selected. The farm adviser in this county makes the necessary local arrangements, including assistance in the selection of a site, and handling registration fees.

After the area is selected and a farm adviser has agreed to serve as

host, the assistant State leaders in the districts involved are contacted. There are five such leaders in Illinois. In the organizational scheme of things they are between the farm advisers and the associate director of Extension.

Through the assistant State leaders a meeting is arranged with the farm advisers in the area where the school is to be conducted. These meetings are held as early as 6 to 8 months before the school starts. This is done so that the farm advisers can include the short course and plans for related activities in their plans of work and also allow adequate time to publicize and promote the event.

At the planning session the poultry Extension specialists review egg production trends in Illinois before starting on a discussion of the short course itself. They point out why a short course is needed, subjects to be covered, dates, and locations. The farm advisers have an opportunity to make suggestions and propose changes. Also, an estimate is obtained from each farm adviser of probable attendance from his county.

About 45 days before the school starts, the poultry specialists send each farm adviser a supply of printed programs, a list of commercial egg producers they know about in his county, a news story, and a suggested enclosure letter to be sent with the printed programs. The Extension editors at the University of Illinois have the programs printed and they prepare the news story and enclosure letter.

A post card is enclosed with each printed program. If the recipient wishes to attend the short course, he fills it out and returns it to the farm adviser. Two weeks before the school starts these cards are forwarded to the poultry Extension specialists. In that way, the specialists are able to

have enough supplies at the meeting.

The first 30 minutes of the initial session are for registration. Each enrollee or family is charged \$5. The money is used to purchase supplies, refreshments, and to help pay for the room rent. Only farm advisers and vo-ag teachers are exempt from the fee. Each enrollee is given a 3-ring, loose-leaf notebook, several sheets of paper, and a sharpened pencil. Also, a record book is issued during the session on cost accounting. Refreshments are served.

Actually, it would be possible to reduce the fee to a nominal amount or eliminate it entirely. But the real purpose for charging is to tie the people down. Once they have invested their money they feel it is up to them to get as much as possible out of the school.

Mimeographed material is passed out at almost every session. This covers the presentation made at that particular meeting but it is not distributed until the session is over. This prevents the people from reading ahead and also encourages them to take notes.

The farm advisers who attend introduce the program and make announcements. This gives them an active part in addition to their role as student.

An evaluation sheet is passed out during the final session. The enrollees have been previously notified of this so they can prepare their answers in a more thoughtful manner. A more complete response has been obtained when time is allotted during the middle of the session for filling out the questionnaire rather than waiting until the end. Several of the suggestions have already been incorporated into the schools.

A certificate is given to those individuals or families who attend a minimum of 4 out of the 6 sessions. The certificates are sent to the various farm advisers after the school has been completed. In this way, the recognition can be given at a county agricultural banquet, or be part of a follow-up story.

In conclusion, short courses or workshops offer a real opportunity to do an effective job of Extension teaching. But they require a lot of human resources, considerable planning, and cooperation if they are to be carried out effectively. ■

Engineering the Farmstead For Greater Efficiency

by JOHN M. JOHNSON

*Extension Agricultural Engineer and Leader
The University of Tennessee*

FARMSTEAD planning is a relatively new farm science.

During the last decade the importance of the farmstead to the farm business increased as farms became larger, more specialized, and as labor became scarce and costly.

What is a farmstead? The farmstead is a complex farm production tool where raw materials are assembled, stored, processed, and converted into a marketable product. It is complicated by the interrelationship of the structures, equipment, space, time, climatic conditions, and constant change. The size, shape, and cost of the plant will vary with the type, size, and degree of specialization of the enterprise served. However, be it a large Grade A or small manufacturing milk operation, a cattle or market hog feeding enterprise, production of eggs or poultry, a grain farm, or even a general farm, the basic purpose of the farmstead is to lower production costs through reduction of time, energy, and waste and the promotion of better management.

Contribution to success. The engineered farmstead contributes to total management through (1) work simplification or elimination, (2) organization of work centers and workloads, (3) easier and more timely marketing and buying, (4) improved product uniformity and quality, (5) healthful environment for worker and animal, and (6) the possibility of easier and more complete record keeping.

To accomplish this, the agricultural engineer is concerned with design and use of labor-reducing equipment, functionally and structurally sound buildings, processing and storage centers, and the arrangements of these into an efficient layout that provides maximum utility with a minimum of space, equipment, and capital investment.

Systems approach. The systems approach is fundamental to the design of a well-coordinated farmstead. However, the engineer must concern himself not only with the mechanical and structural elements of the system, but with the entire farm operation from field to finished product. Field machinery, while generally

not considered a part of farmsteads, is a definite factor in farmstead planning.

Flow charts and work diagrams are the tools used to clarify and evaluate the many farm operations in relationship to the farmstead. Work diagrams are useful in analyzing time, travel, and work methods.

Other factors. There are other factors that influence the design of a farmstead in the area of economics, animal science, sociology, and management that must be considered if the investment is to pass the ultimate test—will it make money and contribute to the welfare of the farm family and the community?

At this point the question may be asked: why does the Extension engineer concern himself with the broad scope of the problem? If the responsibility for the design of farmsteads, farmstead components, and equipment falls within the scope of Extension engineering, then the engineer must accept the responsibility for maximizing effectiveness through the whole-farm approach.

A well-balanced farmstead that is an integral part of the farm operation can be achieved only through a well-balanced intra- and interdisciplinary approach to the problem.

There is little room for error in the construction of farmsteads. Errors in seasonal operations involving cropping systems, varieties, fertilizer, or feeding will be costly but not necessarily fatal, because the practices can be changed and a new start made with the new season. Not so in the farmstead. The investment in buildings, silos, concrete pavements, etc., cannot be "plowed under" or disposed of to make room for a new start next year. A mistake in type, size, location, arrangement, or function of farmstead facilities will continue to drain off profits as long as the error exists. Changes necessary for correcting structural errors may be impracticable, excessively costly, and in some cases impossible.

Team approach. The Extension animal husbandmen, agronomists, and farm management specialists are vital members of the team as are the Extension engineers specializing in electrification, buildings, and machinery.

This unified procedure has a three-way advantage: (1) it makes available the best and most up-to-date research-verified information, (2) it assures that all concerned have the same information, and (3) it results in recommendations being made, understood, and supported by all staff members of the departments involved.

Tennessee's program. Tennessee has such a program, the strength of which has been in the strong unity between subject-matter specialists and the extended efforts and cooperation of county agents. The farm management commodity specialists have cooperated with the engineering specialists in the development of the basic principles for guidance in the science of farmstead planning for the major farm enterprises in the State. This approach, the program, and the methods used in the implementation of the program have strong administrative support. This, together with the Program Leader's guidance and assistance, has given the effort the necessary status to demand attention at all levels, thus contributing heavily to its success.

The program has been aptly labeled FARMSTEAD EFFICIENCY because it is not a materials-handling program,

Acknowledgement is made of the contribution to the program and this paper by many county agents and the specialists of the several departments involved.

not a farm structures program, not a building plan program, not only a program concerning itself with layout—it is a program combining all of these and more. It is a program providing not only isolated solutions to isolated problems, but a program providing basic concepts and principles of planning which will enable the operator and those advising him to solve his farmstead problems.

Feed and equipment salesmen, milk plant fieldmen, sanitarians, power supplier advisers, teachers, and government and private agency engineers and representatives in advisory capacities can give wide coverage through their personal contacts with the farmers. Experience has proved that time and effort spent with them is time well spent.

The ultimate success of any Extension program depends largely upon the county agent and the need for such a program in his county. In the case of the FARMSTEAD EFFICIENCY PROGRAM it is centered upon a current problem which is the concern of many farmers in each of the 95 Tennessee counties. Much of the time and effort put into the program by the engineering specialists has been in assisting the agent in understanding the recommendations, in establishing demonstrations, and in preparing visual aids and mass media information.

Methods. Since the inception of the program in 1959, 17 engineering publications and 22 special building plans have been developed for use in the program. Three sets of color slides were prepared, 102 news articles released to newspapers and magazines, and 84 radio and television programs produced in support of the program.

Scale model ($\frac{3}{4}$ " per foot) buildings for both beef and dairy enterprises have been used extensively by agents and specialists in farmer meetings, television programs,

fairs, and other displays. As a teaching aid, effectiveness of a detailed scale model can be surpassed only by the real thing.

Since the nature of a farmstead prohibits experimentation, testing, or trial by the individual farmer, much emphasis and importance is given to the demonstration method. In the early days of the program farmers would ask, "Where can I see a set-up like you propose?"

Farms for use as demonstrations are selected by the agent and specialist from those farms requesting assistance in planning. Individual attention is given by the agent and specialists in order to establish a practical working demonstration of various phases of the problem in effecting widespread adoption of the program recommendations.

When the program began to take form, the major interest was centered in the dairy industry. The first step in programing was to take the information to the county agents. After a training session with them on the dairy phases of farmstead planning, several agents selected farms for development as demonstrations.

The problems on these farms varied from minor rearrangements and remodeling to a completely new farmstead plan. These early demonstrations had a sizable impact on the future of the program which has grown to include demonstrations on swine, beef, and poultry farms.

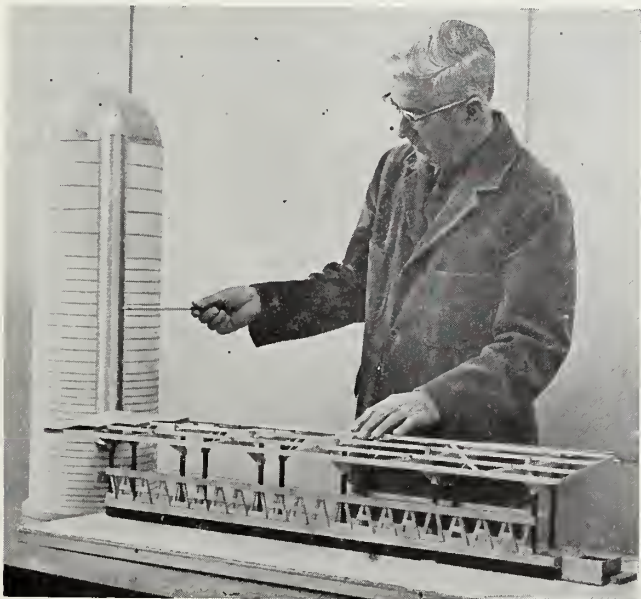
The effort continues to pay dividends. One of the basic principles in planning the farmstead is to allow for expansion in size of the business. Many of the demonstrations that have been in operation for 2 or more years are proving the wisdom of the "open-ended plan."

County agents and other agency groups, including beef and dairy associations, make good use of the educational features of nearby demonstrations. The major milk producer associations and many processors through their fieldmen are making extensive use of demonstrations, and two University Experiment Stations have incorporated many of the recommended features on their production herd farms.

Evaluation. By most standards of evaluation, the program can be called a success. One of the Nation's largest farm management consulting concerns made a voluntary evaluation of a 3-year-old dairy farmstead demonstration. The report read: "these facilities have helped make possible a 20 percent cut in the cost of producing 100 pounds of milk. Labor cost has been reduced one-fourth to one-third, bedding requirements have been lowered by one-third. In addition, the use of concrete lots, plus more careful breeding and culling, have reduced udder problems and increased general health enough that cows average staying in the herd 20 to 25 percent longer than before."

The program, like the farmstead, is not static—they both must be flexible, have built-in provisions for constant change and both must have a high use factor. On the farm when efficiency results in a reasonable degree of success, expansion usually results—the EXTENSION FARMSTEAD EFFICIENCY PROGRAM having reached a reasonable degree of success will be updated and further expanded to reach a larger segment of our commercial farms. ■

Scale models of buildings have been used extensively by Extension agents and specialists as a teaching aid.



From the Administrator's Desk

This month's issue emphasizes our educational leadership in work with farmers—a responsibility at the very heart of Extension's purpose. We have the responsibility to work at the forefront of progress—with the leaders in American agriculture—developing and adopting solutions to problems and developing opportunities. We have the responsibility to work with people having very inadequate farm businesses—developing and adopting solutions to *their* problems, developing *their* opportunities, and for some of these our greatest service may be in helping them identify and prepare for opportunity off the farm. Of course we have the responsibility to work with farmers in the full range of conditions on a wide spectrum of decisions.

This includes work with them to adapt and apply science and technology to the farm. It includes work on a wide range of business and management decisions, decisions becoming more complex and more difficult in this rapidly changing and increasingly complex world. It includes work on their marketing practices, the development and use of marketing procedure and organization that enables them to sell effectively. It includes educational work to help them understand public issues affecting their farm, their community, and their family.

I believe most farmers know that their farm could not long exist as an island of prosperity and opportunity in a rural community with limited prospects for growth and development. The farm family is interested in a rural community that is a desirable place to live, to raise children, to earn a livelihood—and they want some part in its development. They look to Extension, too, to work with them and their neighbors in developing and maintaining theirs as such a community.

Similarly, the farm business is a part of a "community" of farm businesses, a community that stretches across

county lines, across State lines, throughout the Nation, indeed throughout the world. The success of many individual farm businesses is affected by farming conditions and developments in distant farming areas, by National markets, by world production, and worldwide markets. Each farmer's decisions affect this agricultural community.

Most farmers, if they are to make sound decisions, need to consider developments and conditions in this larger agricultural community—and similarly we in Extension need to consider these if we are to plan and carry out the most constructive program. For example, to ignore worldwide competition for the world wheat, rice, beef, poultry, sugar, or cotton market; to ignore competition among fibers; or to ignore our agriculture's excess productive capacity as we plan and carry out our program, would be like hiding our heads in the sand.

One of the important responsibilities of county Extension workers is to work with the local leadership whose advice and help is essential in planning and carrying out programs in such a way that this leadership understands the forces in the local and the larger community. Only with this understanding can this leadership provide sound guidance in determining the emphasis of county programs—in determining which alternative program activities will produce the most valuable long run and immediate help for them and their neighbors.

The decisions we make together can be sound only if we base them on an understanding of the local and the National environment in which we are working. We believe one of the greatest challenges to agricultural agents is to maintain an educational program for this leadership that provides understanding and knowledge as a basis for them to fully use their good judgment in helping us plan our work.—Lloyd H. Davis